

1 What is claimed is:

- 2
- 3 1. A method of selecting a common routing protocol in an ad hoc network having a set of
4 nodes, the method comprising steps of:
5 transmitting a request for routing protocol information to a limited number of nodes, the
6 limited number of nodes including a number of nodes less than the number of nodes in the ad
7 hoc network;
8 receiving routing protocol information from one or more of the limited number of nodes;
9 selecting a common routing protocol based on the received routing protocol information;
10 and
11 transmitting information associated with the selected common routing protocol to all the
12 nodes in the network.
13
- 14 2. The method of claim 1, wherein the selected common routing protocol is a routing
15 protocol to be used by the set of nodes to facilitate multi-hop communication within the ad hoc
16 network and the step of transmitting information further comprises transmitting at least one of an
17 identification of the selected common routing protocol and a selected common routing protocol
18 object to all the nodes in the network.
19
- 20 3. The method of claim 1, wherein the set of nodes are configured to use one of a set of
21 routing protocols, and the routing protocol information transmitted from each of the limited
22 number of nodes comprises a currently used routing protocol and one or more routing protocols
23 that are available for use.
24
- 25 4. The method of claim 3, wherein the step of selecting further comprises steps of:
26 determining whether a majority of the limited number of nodes is currently using a same
27 routing protocol;
28 selecting the same routing protocol as the common routing protocol in response to the
29 majority currently using the same routing protocol; and
30 selecting a routing protocol that is available for use to a largest number of the limited
31 number of nodes in response to no majority existing.

- 1
- 2 5. The method of claim 1, wherein the step of selecting further comprises steps of:
- 3 storing the received routing protocol information in a memory; and
- 4 retrieving the stored routing protocol information from the memory after a predetermined
- 5 period of time; and
- 6 selecting the common routing protocol based at least on the retrieved routing protocol
- 7 information.
- 8
- 9 6. The method of claim 1, wherein the steps of claim 1 are performed by a source node, and
- 10 the limited number of nodes are in a zone, the zone having a radius based on a predetermined
- 11 number of hops from the source node.
- 12
- 13 7. The method of claim 1, wherein the network comprises a source node configured to
- 14 transmit a message to a destination node, and further comprising steps of:
- 15 the source node determining whether a route to the destination node is included in a
- 16 routing table for the source node in order to transmit a message to the destination node; and
- 17 the source node performing the steps of claim 1 in response to the route not being
- 18 included in the routing table.
- 19
- 20 8. A method of selecting a routing protocol for use in a node in an ad hoc network, the
- 21 method comprising steps of:
- 22 receiving a first message identifying a first routing protocol;
- 23 receiving a second message identifying a second routing protocol; and
- 24 selecting one of the first and second routing protocols for use in the node.
- 25
- 26 9. The method of claim 8, wherein the step of selecting further comprises steps of:
- 27 determining whether a predetermined period of time since the first message was received
- 28 is expired;
- 29 selecting the second routing protocol in response to the predetermined period of time
- 30 being expired; and

1 selecting one of the first and second routing protocols for use in the node based on
2 predetermined criteria in response to the predetermined period of time not being expired.
3

4 10. The method of claim 9, wherein the predetermined criteria are associated with a source
5 node identification included in each of the first and second messages and the step of selecting
6 further comprises steps of:

7 determining whether the source node identification for the second message is less than
8 the source node identification for the first message in response to the predetermined period of
9 time not being expired;

10 selecting the second routing protocol for use in response to the source node identification
11 for the second message being less than the source node identification for the first message; and

12 selecting the first routing protocol for use in response to the source node identification for
13 the second message not being less than the source node identification for the first message.
14

15 11. An ad hoc network system comprising:

16 a set of nodes in an ad hoc network, each node being configured to use one of a set of
17 routing protocols,

18 wherein a source node in the network transmits a request for routing protocol information
19 to nodes within a predetermined number of hops from the source node;

20 the source node receives protocol information from the nodes within the predetermined
21 number of hops;

22 the source node selects a common routing protocol based on the received routing protocol
23 information; and

24 the source node transmits the selected common routing protocol to the whole network.
25

26 12. The system of claim 11, wherein the common routing protocol includes a routing
27 protocol to be used by the set of nodes to facilitate multi-hop communication within the ad hoc
28 network.
29

1 13. The system of claim 12, wherein the routing protocol information transmitted comprises
2 a currently used routing protocol and one or more available routing protocols that are available
3 for use to the nodes within the predetermined number of hops.
4

5 14. The system of claim 13, wherein the common routing protocol is a routing protocol
6 currently used by a majority of the nodes within the predetermined number of hops.
7

8 15. The system of claim 13, wherein the common routing protocol is a routing protocol that
9 is available for use to a largest number of the nodes within the predetermined number of hops.
10

11 16. A source node of a set of nodes in an ad hoc network, the source node comprising:
12 a transmitter transmitting a request for routing protocol information to nodes within a
13 predetermined number of hops from the source node;
14 a receiver receiving protocol information from the nodes within the predetermined
15 number of hops;
16 a memory storing the received protocol information; and
17 a processor selecting a common routing protocol based on the received routing protocol
18 information for transmission to all the nodes in the network through the transmitter.
19

20 17. The source node of claim 16, wherein the processor retrieves the received routing
21 protocol information from the memory after a predetermined period of time from the
22 transmission of the request.
23

24 18. The source node of claim 17, wherein the predetermined period of time is based on an
25 maximum time for a message to travel the predetermined number of hops from a node and return
26 to that node.
27

28 19. The source node of claim 16, wherein the routing protocol information comprises a
29 currently used routing protocol and one or more routing protocols that are available for use to the
30 nodes within the predetermined number of hops.
31

1 20. The source node of claim 19, wherein the selected common routing protocol includes one
2 of a routing protocol currently used by a majority of the nodes within the predetermined number
3 of hops and a routing protocol that is available for use to a largest number of the nodes within the
4 predetermined number of hops.
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